Name? Possibly “simm”, short for “simulate from mixed models”

*Previous Work*

longpower, pamm, simFrame, simSummary, scaRabee

longpower is analytic (could be used for comparison?)

pamm appendix S1 expresses the limitations of the package.

**simSummary**

Set up is a pain, but might work if there is a coercion function simr → simSummary

But basically just a nested apply function?

**simFrame**

Hmmm, this actually looks pretty good.

Points of difference for simr?

*Features*

Easy specification of new scenarios:

* Rebalance and longitudinal extension.
* Assignment operators for fixed effects and variance components.

Fitting multiple longitudinal models.

* “Waterfall”: estimates from one model are starting values for the next.
* Compare forwards and backwards waterfalls.

Easy parallel processing , e.g. use plyr.

Simulate missing data (constant and binomial options) as part of the sim-refit process.

* Fast missing data pred object from complete data pred object.

Nice standard graphical outputs.

*Simple case, then extensions*

LMMs (kiwifruit pilot)

GLMMs (argos bird data)

Questions:

Why does Scenario C give the lowest power?

Where did the “humps” come from?

Why do we get a greater error variance with “year” as a categorical variable compared to “year” as a continuous variable?

* Because the “no trend” variance includes variance due to year.

Completely missing rows: is it faster to exclude them or to impute them? Do we get a speed advantage for having a complete (balanced?) design?